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| 09/474,299 | 12/29/1999 | MARCEL F.C. SCHEMMANN | PHA-23.939 | 2088 |

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Alexandria, VA 22314

EXAMINER

KIM, DAVID S

| ART UNIT | PAPER NUMBER |
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2633

DATE MAILED: 06/15/2004

22

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/474,299

Applicant(s)

SCHEMMANN ET AL.

Examiner

David S. Kim

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 9-12, 15, 16, 19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 3, 9-12, 15 and 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 19 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 1999 and 11 May 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the **finality of that action is withdrawn**. Refer to Paper No. 19 and Paper No. 20, p. 33-34 to see further details on the reasons for this withdrawal of finality.

Election/Restrictions

2. **Claims 3, 9-12, and 15-16** are directed to inventions that are independent or distinct from the invention originally claimed and elected for the following reasons:

Applicant is reminded that this application is under a restriction requirement. In Paper No. 13, Applicant elected **Species 4** shown in Fig. 11. The original version of claim 3 did not read on this elected Species 4, and Examiner regrets any resulting inconvenience from the failure to notice this detail. The original version of claims 9-12 and 15-16 read on this elected Species 4. However, subsequent amendments to all these claims have altered the scope of the claims such the present version of these claims (Paper No. 20) no longer read on elected Species 4 shown in Fig. 11.

Regarding claim 3, claim 3 includes two limitations that are directed to an invention that is distinct from the invention originally claimed and elected, Species 4. Note parent claim 1. Claim 3, via parent claim 1, reads on converting fiber hub 791 in Fig. 11. Claim 3 reads, "multiple carrier signals of the input light beam have radio frequencies in a frequency band extending at least between approximately 5 and 45 MHz." This limitation conflicts with the frequency band of 100-200 MHz shown on the input light beam of input optical fiber 802 in Fig. 11, p. 40, 2nd full paragraph. Additionally, claim 3 reads, "two or more additional output optical paths." This limitation is not shown in Fig. 11; Fig. 11 only shows one additional output optical path (optical fiber 818). Rather, claim 3 appears to read on at least **non-elected Species 1, Fig. 1**.

Art Unit: 2633

Regarding claim 9, claim 9 includes one limitation that is directed to an invention that is distinct from the invention originally claimed and elected, Species 4. Note parent claim 1. Claim 9, via parent claim 1, reads on converting fiber hub 791 in Fig. 11. Claim 9 reads, "conversion means for converting and combining." Fig. 11 shows combiner 799, but combiner 799 is located in HFCN 792, not in converting fiber hub 791. As the optical upconverter means of Fig. 11 lacks this means for combining, claim 9 does not read on Species 4. Rather, claim 9 appears to read on at least **non-elected Species 1, Fig. 1**.

Regarding claims 10-12 and 15-16, these claims depend on claim 9. Thus, as claim 9 does not read on elected Species 4, so also claims 10-12 and 15-16 do not read on elected Species 4. Moreover, after a cursory review of claims 10-12 and 15-16, Examiner notes that the limitations contained therein also present **additional conflicts with the elected Species 4** shown in Fig. 11.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, **claims 3, 9-12, and 15-16 are withdrawn from consideration** as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

As a **remedy**, Examiner encourages Applicant to closely review claims 3, 9-12, and 15-16 with Fig. 11. If Applicant desires Examiner to consider the merit of the limitations of these claims, Examiner suggests **adjustment of the claim language** so that these claims properly read on elected Species 4.

Drawings

3. Drawings were received on 11 May 2004. Applicant's compliance with the objections raised in the previous Office Action (Paper No. 17) is noted and appreciated. Sheet 7/11 is approved. However, other drawings (some of those filed on 29 December 1999 and 11 May

Art Unit: 2633

2004) are still disapproved. Upon further review of the drawings and the specification together, the Office has noticed numerous instances of missing reference characters in the drawings, inaccurate reference characters, instances of missing reference characters in the specification, and conflicting usages of reference characters. Some examples include:

In Fig. 1, reference character 116 seems misplaced. It should be placed on a path from splitter 114. See p. 22, 2nd paragraph.

In Fig. 1, reference character 126 is still missing. There are two instances of 127, and it appears that one of these should be 126.

In Fig. 1, there is no lead line connecting reference character 211 and its corresponding optical transmitter.

In Fig. 4, reference character 301 is missing from the specification.

In Fig. 5, reference character 338 is missing. See p. 32, 1st paragraph.

In Fig. 5, reference characters 372-378, 380, and 381 are missing from the specification.

A thorough and careful review of the drawings and the specification together is strongly encouraged. Also, a proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. Applicant's compliance with the objections raised about the abstract in the previous Office Action (Paper No. 17) is noted and appreciated.

5. Applicant's compliance with the objections raised about the specification in the previous Office Action (Paper No. 17) is noted and appreciated. However, upon further review of the drawings and the specification together, the Office has noticed numerous instances of inaccurate reference characters, apparent misspellings, and incongruities with the drawings. Some examples include:

Art Unit: 2633

On p. 28, 3rd paragraph, “modulation portion 264” is used where “modulation portion 265” may be intended. See Fig. 2.

On p. 31, 2nd paragraph, “transmission lines 307-307” is used where “transmission lines 306-307” may be intended. See Fig. 4.

On p. 32, last two paragraphs, “331” is used where “336” may be intended. See Fig. 5.

On p. 33, 1st paragraph, “to an optical up-converted and up-converter” is used where “to an optical up-converter and up-converted” may be intended.

On p. 33, 4th paragraph, “HFCN 336 is shown in figure 5” is used where “HFCN 362 is shown in figure 5” may be intended. Also, in the same paragraph, “371 connects between HFCN 366” is used where “371 connects between HFCN 362” may be intended.

A thorough and careful review of the drawings and the specification together is strongly encouraged.

Claim Objections

6. Applicant presented a traversal of the objection to **claim 2**: the claimed frequency range is a subset of Applicant’s disclosed frequency range (Paper No. 20, p. 33, last full paragraph). This traversal is persuasive, and the objection is withdrawn.

7. **Claims 1 and 3** are objected to because of the following informalities:

In claim 1, second to last line, “converter” is used where “upconverter” may be intended.

In claim 3, second to last indented portion (Paper No. 20, middle of p. 11), “carrier frequencies of each the first additional frequency bands” is used where “carrier frequencies of the first additional frequency band” may be intended. Also, in the same portion, “carrier frequencies of the second additional frequency bands” is used where “carrier frequencies of the second additional frequency band” may be intended. While there is antecedent basis for “first additional frequency **band**” and “second additional frequency **band**,” antecedent basis is lacking for “first additional frequency **bands**” and “second additional frequency **bands**.”

Claim Rejections - 35 USC § 112

8. Applicant amended claims 3 and 10 to obviate the previous rejections of **claims 3 and 10** under 35 U.S.C. 112. These rejections are withdrawn.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. **Claims 1 and 19** are rejected under 35 U.S.C. 102(e) as being anticipated by Wright (U.S. Patent No. 5,841,468).

Regarding claim 1, Wright discloses:

Optical apparatus, comprising:

an input optical path (service lines 18 from subscriber sites to service sites 16 in Fig. 1, col. 5, lines 1-3, col. 11, lines 26-27) connected to one of a plurality of receiver nodes (subscriber sites on service lines 18 in Fig. 1) and carrying an input light beam modulated by an input carrier signal modulated by an information signal, the input carrier signal having a radio frequency (col. 2, lines 3-7);

an output optical path (receive/return cables 30 from service sites 16 to headend 12 (distribution hubs 14 are optional, col. 2, lines 39-45, 59-61) in Fig. 1, col. 5, lines 1-3, col. 11, lines 26-27) connected to one of an array of head-end node receivers and carrying an output light beam modulated by an output carrier signal modulated by the same information signal as

Art Unit: 2633

the input carrier signal, the output carrier signal having a higher (col. 4, lines 22-31, col. 9, lines 48-52) radio frequency than the input carrier signal; and

optical upconverter (service sites 16 in Level 3 of Fig. 1 via up converters in Figs. 2A and 3) means for converting the input light beam into the output light beam, said optical converter means connecting said input optical path to said output optical path.

Regarding claim 19, Wright discloses:

A method of providing optical communications, comprising the steps of
providing an electronic multicarrier communication signal (signal to transmitter 50 in service sites 16, Figs. 2A and 3);

converting (transmitter 50 in Figs. 2A and 3, col. 10, line 59 – col. 11, line 3, col. 4, lines 17-36) the multicarrier electronic communication signal into a first multicarrier optical communication signal including a multitude of carrier signals modulated by respective information signals, with the frequencies of the carrier signals different from each other and within a first frequency band (for example, frequency band of 5-40 MHz exiting from up-converter 48 in Figs. 2A and 3); and

converting (note that optical signal from service sites 16 is converted to optical signal from distribution hubs 14, Figs. 2B and 4 as distribution hubs 14) the first multicarrier optical signal into a second multicarrier optical signal including a multitude of carrier signals with frequencies in a second frequency band with a minimum frequency higher than a maximum frequency of the first frequency band (for example, frequency band of 77-112 MHz exiting from up-converter 48 in Figs. 2B and 4).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art.Unit: 2633

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. **Claims 2, 4, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright as applied to claims 1 and 19 above, and further in view of Pidgeon (U.S. Patent No. 5,153,763).

Regarding claim 2, Wright discloses:

The apparatus of claim 1, further comprising:

an input coupler configured to connect an input optical fiber to the input optical path;

an output coupler configured to connect an output optical fiber to the output optical path

(input and output couplers are conventional for connecting fibers and paths); and

one or more additional input optical paths (service lines 18 from subscriber sites to service sites 16 in Fig. 1; col. 5, lines 1-3, col. 11, lines 26-27) configured to provide a plurality of additional input optical paths carrying respective additional input light beams modulated by respective additional input carrier signals each modulated by a respective additional information signal, the additional respective input carrier signals having radio frequencies (col. 2, lines 3-7), and

Art Unit: 2633

one or more additional output optical paths (receive/return cables 30 from service sites 16 to headend 12 (distribution hubs 14 are optional, col. 2, lines 39-45, 59-61) in Fig. 1; col. 5, lines 1-3, col. 11, lines 26-27) each configured to carry a respective additional output light beam modulated by respective additional output carrier signal modulated by the same information signal as corresponding additional input carrier signal, the respective additional output carrier signal having a higher (col. 4, lines 22-31, col. 9, lines 48-52) radio frequency than the corresponding additional input carrier signal, wherein

the optical upconverter means (service sites 16 in Level 3 of Fig. 1 via up converters in Figs. 2A and 3) is further configured to convert the additional input light beam into the additional output light beam.

Wright does not expressly disclose the following limitations (but Pidgeon does):

An apparatus wherein

a wavelength of the input or output light beams is between 1250 and 1360 nm or between 1500 and 1610 nm (Pidgeon, col. 3, lines 27-30), and one of the following conditions is true

a radio frequency of the output carrier signal is at least approximately 2 times higher than a radio frequency of the input carrier signal (Pidgeon, Figs. 2-3),

the radio frequency of the input carrier signal is below 100 MHz (Pidgeon, Figs. 2-3) and the radio frequency of the output carrier signal is above 200 MHz,

the radio frequency of the output carrier signal is between approximately 400 and 900 MHz (Pidgeon, Figs. 2-3),

the radio frequency of the output carrier signal is more than approximately 40 times higher than the frequency of the input carrier signal, and

Art.Unit: 2633

the radio frequency of the input carrier signal is approximately between 5 and 65 MHz and the radio frequency of the output carrier signal is at least 400 MHz (Pidgeon, Figs. 2-3).

Rather, Wright does not discuss the transmission details of its CATV transmission method to this extent. However, Pidgeon does teach a related CATV transmission method that incorporates these limitations. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement the transmission method of Pidgeon to the transmission method of Wright. One of ordinary skill in the art would have been motivated to do this to reduce distortion (Pidgeon, abstract).

Regarding claim 4, Wright discloses:

The apparatus of claim 1 in which:

the optical upconverter means includes:

electronic upconverter (up converters in Figs. 2A and 3) means for converting an input electronic current signal modulated by the input carrier signal modulated by the information signal into an output electronic current signal modulated by the higher frequency output carrier signal modulated by the same information signal; and

optical transmitter means (transmitter 50, col. 8, lines 39-41) for converting the output electronic current signal carrying the higher frequency carrier signal into the output light beam carrying the same higher frequency output carrier signal.

Wright does not expressly disclose:

the optical upconverter means including

optical receiver means for converting the input light beam carrying the input carrier signal into an input electronic current signal carrying the same input carrier signal.

Art Unit: 2633

However, such optical receiver means are extremely common and conventional in the art. Wright strongly suggests such optical receiver means by the disclosure of the input optical paths (service lines 18 from subscriber sites to service sites 16 in Fig. 1; col. 5, lines 1-3, col. 11, lines 26-27) and the electronic components within the optical upconverter means (service sites 16 in Figs. 2A and 3), including the electronic upconverter means (up converters in Figs. 2A and 3). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement such optical receiver means in the optical upconverter means of Wright. One of ordinary skill in the art would have been motivated to do this since there is a need for the electronic components within the optical upconverter means of Wright to interact with the input light beams on the input optical paths; optical receiver means that perform optical to electrical conversion are the conventional means for meeting this need.

Regarding claim 21, Wright discloses:

The method of providing optical communications, of claim 19, comprising the steps of:
providing a respective multitude of customer interface units connected to each of a multitude of coaxial cable networks (Fig. 1, col. 5, lines 48-60);

generating a first electronic multicarrier signal in each of the coaxial cable networks (col. 1, lines 50-57), using the multitude of the customer interface units connected to each network, with the frequencies of carrier signals of the first electronic signal in each coaxial network in the same first frequency band (col. 2, lines 44-45);

providing one or more hybrid fiber cable nodes (Figs. 2A and 3, col. 5, lines 54-60);

providing one or more optical fibers (col. 5, lines 52-54);

converting one or more forward multicarrier optical signals from one of the optical fibers into forward multicarrier electronic signals in the coaxial cable networks (col. 5, lines 57-60);
and

separating the multitude of first electronic signals in the coaxial cable networks into a multitude of separated first electronic signals in the nodes (Fig. 1, col. 1, lines 37-39);

Wright does not expressly disclose the following (but Pidgeon does):

first converting (Pidgeon, Figs. 2-3) a first plurality of separated first electronic signals in the nodes into a single second electronic multicarrier signal with frequencies of carrier signals in a second frequency band having a minimum carrier frequency higher than a maximum carrier frequency of the first frequency band and a width of the second frequency band is less than one octave; and

second converting the second electronic signal into a first optical multicarrier signal (Pidgeon, transmitters in Figs. 2-3) in a first one of the optical fibers, with frequencies of carrier signals in the second frequency band.

Rather, Wright does not discuss the transmission details of its CATV transmission method to this extent. However, Pidgeon does teach a related CATV transmission method that incorporates these limitations. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement the transmission method of Pidgeon to the transmission method of Wright. One of ordinary skill in the art would have been motivated to do this to reduce distortion (Pidgeon, abstract).

Response to Arguments

14. Applicant's arguments filed on 11 May 2003 (Paper No. 20), with respect to the rejections of **claims 1-2 and 4** under Pidgeon have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Wright as the primary reference.

Art.Unit: 2633

15. Applicant's arguments filed on 11 May 2003 (Paper No. 20), with respect to the rejections of **claim 3** under Pidgeon and **claims 9-12 and 15-16** under Wright have been fully considered but they are moot in view of the withdrawal of these claims from consideration.

16. Applicant's arguments filed on 11 May 2003 (Paper No. 20), with respect to the rejections of **claims 19 and 21** under Wright have been fully considered but they are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 703-305-6457. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DSK


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